

REMARKS

Upon entry of the present amendment, the claims remaining in the application for consideration are the original claims 1-5.

THE CLAIM REJECTIONS UNDER 35 USC § 103

The OA rejects claims 1-5 under 35 USC 103(a) as being unpatentable over the combination of Tadayuki et al. US 5,668,086, Yamashita et al. US 4,764,206, and White et al. US 3,931,137.

Applicant respectfully requests reconsideration of the rejection, for the following reasons:

1. There is no justification in Tadayuki et al, Yamashita et al. or White et al., or any other prior art separate from applicant's disclosure, which suggests that these references be combined, much less be combined in the manner proposed in the OA.
2. The proposed combination would not be physically possible nor operative.
3. Even if Tadayuki et al and Yamashita et al. and White et al. were to be combined in the manner proposed, the proposed combination would not result in the invention as specified in applicant's claims.
4. The results achieved by applicant's invention are superior and unsuggested by the applied references.
5. Up to now, those skilled in the art thought or were skeptical that the techniques used in applicant's invention were unworkable or presented an insuperable barrier.
6. Up to now, those skilled in the art thought or found the problem solved by applicant's invention was insoluble, that is, the invention converts failure into success. The failures of prior art workers indicate that a solution was not obvious.
7. Applicant's invention is classified in a crowded art. Therefore, a small step forward should be considered significant.

8. The prior art lacks any suggestion that the references should be modified or combined in a manner required to meet the claims.
9. The references do not teach what the OA relies upon them supposedly teaching.
10. Applicant's invention solves a long-felt, long-existing, but unsolved need.
11. The OA makes a strained interpretation of the references that could be made only by hindsight.
12. Applicant's invention solves a different problem than the problem addressed by the three applied references.
13. The OA does not present a convincing line of reasoning as to why the claimed subject matter as a whole, including its differences over the prior art, would have been obvious.
14. The prior art references do not contain any suggestion (expressed or implied) that they be combined, or that they be combined in the manner suggested.
15. Each reference is complete and functional in itself, so there would be no reason to use parts from or add or substitute parts to any other reference.
16. The references take mutually exclusive paths and reach different solutions to solve different problems. Since they teach away from each other, it would not be logical to combine them.
17. The references themselves teach away from the suggested combination.
18. Those skilled in the art would find it physically impossible to combine the references in the manner suggested.
19. If combined, the references would produce an inoperative combination.

20. It would be necessary to make modifications, not taught in the prior art, to combine the references.
21. Even if combined, the references would not meet the claims.
22. The combination suggested requires a series of separate, awkward combinative steps that are too involved to be considered obvious.
23. The fact that three references must be combined to allegedly meet the invention is evidence of unobviousness.

The OA states that the claims are directed toward a dispersible granule containing set proportions (weight percents) of various ingredients.

Applicant respectfully traverses this because claims 1-4 are directed to a water dispersible granule comprising various ingredients within ranges of weight percents., and not set proportions.

The OA states that the claims are directed towards...the breakage promoter can be urea or polyvinyl pyrrolidone. Applicant respectfully traverses this because it is misleading.

It is respectfully submitted that, as set forth in claim 3, the breakage promoter is at least one selected from the group of sodium sulfate, sodium nitrate, potassium chloride, ammonium sulfate, urea, polyvinyl pyrrolidone, and the like.

The OA states that the claims are directed towards...the extender can be white carbon or water soluble carbon. Applicant respectfully traverses this, because it is misleading.

It is respectfully submitted that the extender, as set forth in claim 4, is at least one selected from the group consisting of diollite, kaolin, clay, white carbon, water soluble starch, calcium carbonate, betonite, pyrophyllite, talc, and the like.

The OA states that the claims are further directed toward a method of preparing the paraquat dichloride granules; said method comprising mixing the active compound, surfactant, breakage

promoter and extender at room temperature for a set time, forming the granules in a granulator and drying the product at 70-150 degrees for a set time. Applicant respectfully traverses this.

It is respectfully submitted that, as set forth in claim 5, there is claimed a method of preparing a “water dispersible” granule (not a “paraquat dichloride” granule), and wherein the ingredients are mixed together not for a set time, but rather for a time period in the range of 10 minutes to one hour, and wherein the drying step does not take place for a set time, but rather for a time period within the range of 10 minutes to one hour, at 70-150°C.

The OA states that Tadayuki discloses a herbicide composition in the form of granules comprising paraquat, anionic surfactant and chelating agent; wherein the molar ratios of the ingredients are also disclosed (col. 1, lines 50-55; col. 4, lines 45-65 and col. 7, lines 55-65). Applicant respectfully traverses this.

Applicant respectfully submits that Tadayuki discloses a herbicide composition comprising paraquat and/or diquat, an anionic surfactant and a chelating agent; but wherein the molar ratios of the ingredients are not disclosed at col 1, lines 50-55, col. 4, lines 45-65, and col. 7, lines 55-65. In contrast, the only molar ratio which is disclosed is the ratio of the chelating agent to the paraquat and/or diquat component.

The OA states that the disclosures in Tadayuki expressly addresses applicant’s claims 1 and 2. Applicant respectfully traverses this.

First, it is respectfully submitted that it is unclear what the OA has in mind by the language “expressly addresses”. What is clear is that the OA does not contend that Tadayuki discloses applicant’s claims 1 and 2 because the OA relies on combining Tadayuki with Yamashita and White.

Indeed, the OA concedes that Tadayuki does not disclose a breakage promoter nor an extender in the composition.

The OA states that Yamashita discloses a herbicidal composition as wettable powder comprising paraquat dichloride, polyvinyl pyrrolidone, white carbon and surfactant and wherein the relative proportions in wt/% of the ingredients are disclosed (col. 5, lines 50-55). Applicant respectfully traverses this.

Applicant respectfully submits that Yamashita col. 5, lines 50-55 does not disclose the relative proportions in wt/% of the ingredients, but rather discloses each ingredient by the amount of parts by weight.

Furthermore, it is respectfully submitted that applicant's claims 1-4 require 1-20 wt% of a breakage promoter, wherein Yamashita col. 5, lines 50-55 discloses polyvinyl pyrrolidone in 60 parts.

Furthermore, it is respectfully submitted that applicant's invention relates to a water dispersible granule formed by mixing its components, kneading the mixture together with a small amount of water, forming granules out of the needed mixture using a granulator or the like, and drying the granules. In contrast, Yamashita col 5, lines 50-55 relates to a paraquat wettable powder prepared by uniformly mixing and grinding solid paraquat components and other ingredients.

The OA states that Yamishita addresses applicant's claims 1, 2, 3 and 4 by disclosing how the granules are prepared in example 22. Applicant respectfully traverses this.

It is respectfully submitted that Yamishita example 22 discloses the preparation of a paraquat wettable granule prepared by mixing a concentrated paraquat solution with white carbon to form a solid mixture, followed by mixing the other ingredients; wherein the resulting mixture is uniformly mixed and ground, and then granulated by spraying water containing 2% of PVP K-90 in a fluid bed type granulator, resulting in paraquat wettable granules containing Guar gum (which is not present

in applicant's invention), and in weight parts that are outside the specific weight percent ranges of applicant's claims.

The OA concedes that Yamashita does not disclose the use of breakage promoter as urea or povidone as an ingredient and does not disclose the method of drying the crystals.

In addition, applicant respectfully submits that Yamashita does not disclose a water dispersible granule, as specified in claim 1, and which includes 1-20 wt% of a breakage promoter which is selected from the group consisting of sodium sulfate, sodium nitrate, potassium chloride, ammonium sulfate, urea, polyvinyl pyrrolidone, and the like.

The OA states that White et al addresses applicant's claims 1 and 5. Applicant respectfully traverses this.

First, it is respectfully submitted that it is unclear what the OA means by saying that White "addresses" applicant's claims 1 and 5.

Secondly, applicant respectfully submits that White, taken singly or in combination with Tadayuki and Yamashita, does not disclose or make obvious:

a water dispersible granule containing paraquat comprising 5 to 50wt% of Paraquat Dichloride, 5-30wt% of a surfactant, 1-20wt% of a breakage promoter, and the remainder being an extender,

wherein said water dispersible granule is prepared by mixing the above components,

kneading the mixture together with a small amount of water,

forming granules out of the kneaded mixture using a granulator or the like, and

drying the granules, as recited in applicant's claim 1; nor

a preparing method of water dispersible granule containing paraquat comprising:

a) mixing paraquat dichloride, a surfactant, a breakage promoter, and an extender, and

kneading the mixture together with 1-15wt% of water for the mixture at room temperature for 10 min- 1hr;

b) forming granules out of product of step a) using a granulator; and

c) drying product of step b) in a fluidized bed dryer at 70-150°C for 10 min-1 hr.

The OA states that one of ordinary skill would have been motivated to prepare herbicidal composition as by the methods disclosed in the cited Tadauki, Yamishita and White prior art.

The OA further states that one of ordinary skill would have been motivated to include urea as breakage promoter and also include optional additional ingredients.

The OA further states that one of ordinary skill in the art would expect to obtain the same level of success in preparing an effective paraquat dichloride herbicide as each reference has disclosed.

The OA further states that by using urea instead of polyvinyl pyrrolidone as breakage promoter, one of ordinary skill would expect to obtain a urea salt of paraquat - a product of that is shown to be effective as a herbicide in the form that can readily be pressed into granules, said granules can readily be dissolved in water and applied for controlling unwanted vegetation for longer periods of time due to improved stability.

The OA further states that therefore the invention as a whole would have been prima facie obvious to one of ordinary skill at the time the invention was made.

Applicant respectfully traverses the OA statements concerning the artisan and alleged obviousness.

It is respectfully submitted that if the artisan would have been motivated to prepare an herbicidal composition as by the methods disclosed in the cited art, then the artisan would be using a method which is different than the method described in applicant's claim 5. Indeed, none of the prior art methods discloses a method as set forth in applicant's claim 5.

With regard to the contention that the artisan would have been motivated to include urea as a breakage promoter and also include optional additional ingredients, it is respectfully submitted that the cited art, taken singly or in combination, fails to disclose or make obvious:

a water dispersible granule containing paraquat comprising 5-50wt% of paraquat dichloride, 5-30wt% of a surfactant, 1-20wt% of urea, and the remainder being an extender,

wherein said water dispersible granule is prepared by mixing the above components,

kneading the mixture together with a small amount of water,

forming granules out of the kneaded mixture using a granulator or the like,

and drying the granules (as required by applicant's claim 1); nor

a preparing method of water dispersible granule containing paraquat comprising: a) mixing paraquat dichloride, a surfactant, urea and an extender

and kneading the mixture together with 1-15wt% of water for the mixture at room temperature for 10 min-1 hr;

b) forming granules out of step a) using a granulator;

and c) drying the product of step b) in a fluidized bed dryer at 70-150°C for 10 min-1hr (as required by applicant's claim 5).

In contrast, it is respectfully submitted that applicant's claimed invention is completely different from the cited art, and employs completely different means in solving a problem of the prior art.

The main problems addressed and solved by the present invention are the problems of toxicity due to skin damage when the skin comes in contact with a herbicide, and the toxicity problem when there is inhalation of a herbicide.

In this connection, attention is respectfully directed to applicant's specification page 1, line 16 through page 2, line 14, and page 15, lines 13-15.

The cited art are not directed to this problem.

As stated at applicant's page 2, lines 13-14, the present invention provides a formulation type which solves the aforementioned problems and has superior herbicidal effect, safety and low cost.

Furthermore, with respect to Tadayuki, attention is respectfully directed to applicant's page 1, last paragraph, which states:

"When an ionic surfactant is added to increase the adhesion between leaf and Paraquat, there may be a problem of cohesion or precipitation between the Paraquat and the anionic surfactant. There was an attempt to solve this problem using an aliphatic or aromatic chelating compound (US Patent 5,668,086). However, it could not solve the aforementioned safety problem".

In further regard to Tadayuki, it is respectfully submitted that the action of the chelating agent disclosed by Tadayuki is an action of a metathesizing ion that is combined to bipyridylium salt in treating a liquified bipyridylium aqueous solution. In contract, it should be noted that the breakage promoter in accordance with the present invention disintegrates the combination of a negative ion in the clay minerals and bipyridylium when being diluted for the spreading to assist in the herbicidal effect.

In further contrast, White discloses a preparation of the bipyridylium/urea complex in a solid phase.

It is also important to note that the inventions disclosed by the cited art involve a powder, and this is still fraught with the danger of inhalation poisoning as mentioned hereinabove.

In addition, applicant has continuously researched to solve the problem that the herbicidal

effect does not reveal due to the adsorption of Paraquat and negative ion in the clay materials mainly used as an extender during the manufacturing process of the Paraquat water dispersible granule.

Furthermore, applicant has confirmed that an inorganic salt claimed as a breakage promoter is able to solve the above problem by the action of ion metathesis, and the content used depends upon the inorganic salt and the kind of extender employed.

Therefore, the present invention solves the problem of inhalation and the contact of Paraquat and the problem of the generation of fine particles and the uniformity of granule by the existing prior art techniques, and provides a technology which enables a high content preparation of 50 percent. Therefore, it is respectfully submitted that applicant's claimed invention is not easily derived or made obvious from the combination of the cited art.

Furthermore, Tadauki, Yamishita and White do not contain any justification to support their combination, much less in the manner proposed.

With regard to the proposed combination of Tadauki, Yamishita and White, it is well known that in order for any prior-art references themselves to be validly combined for use in a prior art § 103 rejection, *the references themselves* (or some other prior art) must suggest that they be combined. E.g., as was stated in In re Sernaker, 217 U.S.P.Q. 1,6 (C.A.F.C. 1983):

“[P]rior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings”.

That the suggestion to combine the references should not come from applicant was forcefully stated in Orthopedic Equipment Co. v. United States, 217 U.S. P.Q. 193, 199 (C.A.F.C. 1983):

“It is wrong to use the patent in suit [here the patent application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the

claims in suit [here the claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO]”.

As was further stated in Uniroyal, Inc. v Rudkin-Wiley Corp., 5 U.S.P.Q. 2d 2434 (C.A.F.C. 1988) “[w]here prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself...*Something in the prior art must suggest the desirability and thus the obviousness of making the combination.*” [Emphasis supplied].

In line with these decisions, the Board stated in Ex parte Levengood, 28 U.S.P.Q. 2d 1300 (P.T.O.B.A.&I. 1993):

“In order to establish a *prima facie* case of obviousness, it is necessary for the examiner to present *evidence*, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one having ordinary skill in the art *would have been led* to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention...That which is within the capabilities of one skilled in the art is not synonymous with obviousness...That one can *reconstruct* and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention... Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a *prima facie* case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in that art, that ‘would lead’ that individual ‘to combine the relevant teachings of the references.’ ...Accordingly, an examiner cannot establish obviousness by locating references which describe

various aspects of a patent applicant's invention without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done."

In the present case, there is no reason given in the last OA to support the proposed combination, other than the statements "One of ordinary skill would have been motivated to prepare herbicidal composition as by the methods disclosed in the prior art cited (Patent 086, Patent '206 and Patent 137). One of ordinary skill would have been motivated to include urea as breakage promoter and also include optional additional ingredients. One of ordinary skill in the art would expect to obtain the same level of success in preparing an effective paraquat dichloride herbicide as each reference has disclosed. By using urea instead of polyvinyl pyrrolidone as breakage promoter, one of ordinary skill would expect to obtain a urea salt of paraquat- a product that is shown to be effective as a herbicide in the form that can readily be pressed into granules, said granules can readily be dissolved in water and applied for controlling unwanted vegetation for longer periods of time due to improved stability. Therefore the invention as a whole would have been prima facie obvious to one of ordinary skill at the time the invention was made".

However, the fact that the applied references each teach features aimed at solving different problems is not sufficient to gratuitously and selectively substitute parts of one reference, for a part of another reference in order to meet applicants' claimed invention.

As stated in the above Levengood case,

"That one can *reconstruct* and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention".

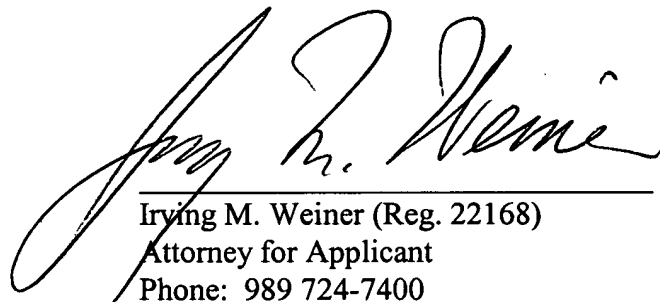
Applicant therefore respectfully submits that combining Tadauki, Yamishita and White is not legally justified and is therefore improper. Thus, applicant respectfully submits that the rejection on these references is also improper and should be withdrawn.

It is respectfully submitted that the application is now in condition for allowance, and a notice to this effect is earnestly solicited.

If the Examiner believes that the application is not now in condition for allowance, it is respectfully requested that the Examiner telephone the undersigned attorney for applicant in an effort to facilitate the prosecution, and/or to narrow the issues for appeal, if necessary.

Favorable reconsideration is respectfully requested.

Respectfully submitted,

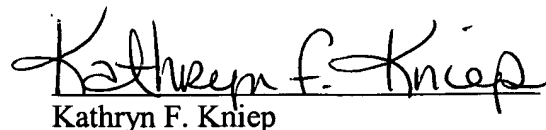


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I hereby certify that the foregoing amendment was sent by first class mail to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 26, 2004.



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